

REEF-LIKE CARBONATE BUILDUPS ON THE LOUISIANA CONTINENTAL SLOPE

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POSTER SESSION ABSTRACT

Research submersibles are being used in a study of massive carbonate buildups on the Louisiana continental slope. Geohazard survey data (high resolution seismic profiles and side-scan sonographs) as well as submersible observations confirm the widespread occurrence of complex sea floor topography associated with areas overlying and on the flanks of salt diapirs that have penetrated to near the modern sea floor. Direct sampling of these unusual buildups from the shelf edge (134 m) to a depth of over 500 m indicates that they are composed of authigenic carbonate of various mineralogies (aragonite, Mg-calcite, and dolomite). These carbonates are characterized by extreme depletion of the C-13 isotope (to values of -48‰ PDB) which associates them with carbon from oil and gas (both biogenic and thermogenic). Hydrocarbons are transported to the sea floor via numerous diapir-related faults. Bacterial oxidation of the hydrocarbons and sulphate reduction in the presence of hydrocarbons in anoxic settings creates isotopically light carbon dioxide and bicarbonate in pore waters which promotes carbonate precipitation. Six species of bacteria responsible for these reactions have thus far been identified from active seep areas.

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